

January 1, 2014

Actuarial Valuation Report

Gardner Retirement Board

Lawrence B. Stone



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October 21, 2014

Gardner Retirement Board
City Hall
95 Pleasant Street
Gardner, MA 01440

Dear Gardner Retirement Board:

Stone Consulting, Inc. has performed a January 1, 2014 actuarial valuation of the Gardner Retirement System. This valuation and report was prepared using generally accepted actuarial principles and practices and meets the parameters set by the Governmental Accounting Standards Board Statement (GASB) No. 27. To the best of our knowledge, this report is complete and accurate, and the assumptions used represent our best estimate of anticipated experience of the system.

As part of performing the valuation, Stone Consulting, Inc. was furnished member data by the Gardner Retirement System's administrative staff. Although examined for general reasonableness, the data was not audited by the actuary. In addition, the administrative staff furnished financial statements that were not audited by the actuary or by the plan's auditors.

The funding objective of the plan is to fully fund the system while attempting to maintain a stable contribution amount for the upcoming fiscal year that is consistent with prior funding schedules or if employer finances allow it, to increase the contribution amount. This funding objective is being met.

We anticipate over time the contribution level to increase as a percentage of payroll. The contribution rate is determined by adding the normal cost plus an amortization of the unfunded actuarial accrued liability. The normal cost is expected to remain at a level percentage of payroll. The length of the funding schedule contained in this actuarial valuation report is sixteen years (fully funded in Fiscal 2031). The contribution is set to increase by 6.00% for two years and 4.50% thereafter. The contribution in Fiscal 2031 decreases instead of increasing.

The amortization payments are the amount left over after subtracting the normal cost and the 3(8)(c) payments from the contribution amount.

The contribution amount for Fiscal Year 2016 is \$3,435,751 which is equal to the anticipated contribution amount for Fiscal 2016 from the prior funding schedule. PERAC and GASB guidelines indicate that actuarial valuations should be conducted at least every other year. The Gardner Retirement Board conducted their previous actuarial valuation effective January 1, 2013.

We are pleased to present the results of this valuation. If the Retirement Board has any questions on the content of this report, we would be glad to respond. Please note that this report is meant to be used in its entirety. Use of excerpts of this report may result in inaccurate or misleading understanding of the results.

I, Lawrence Stone, am a consultant for Stone Consulting, Inc. I am a member of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Respectfully submitted,
STONE CONSULTING, INC.
Actuaries for the Plan

Lawrence B. Stone
Member, American Academy of Actuaries

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Introduction

This report presents the results of the actuarial valuation of the Gardner Retirement System. The valuation was performed at the request of the Retirement Board as of January 1, 2014 for the purpose of determining the contribution requirements for Fiscal Year 2016 and beyond. The contribution requirements are based on:

- The financial condition of the system as of December 31, 2013
- The benefit provisions of M.G.L. Chapter 32 and related statutes;
- The demographics of members in the system (i.e., active and inactive participants, retirees and beneficiaries as of January 1, 2014);
- Economic assumptions regarding salary increases and investment earnings; and
- Other actuarial assumptions (e.g., withdrawals, retirement, death, etc.)

January 1, 2014 Valuation Summary

	January 1, 2014	January 1, 2013	Change
Contribution Fiscal 2016	\$3,435,751	\$3,435,751	\$0
Funding Schedule Length	16 years	15 years	1 year
Funding Ratio	56%	54%	2%
Interest Rate Assumption	8.00%	8.00%	0.00%
Salary Increase Rate Assumption	Select and 3.25% Ultimate	Same	0.00%

- The Fiscal Year 2016 contribution is the same as the planned 2016 contribution. Stone Consulting, with agreement from the Retirement Board, values assets using market value of assets.

The System experienced a 15.2% annual return on the market value of assets versus our assumption of an 8.00% return which resulted in a \$2.6 million net actuarial gain. The assets are mainly invested in Pension Reserves Investment Trust (PRIT). The interest rate assumption was maintained at 8.00% to reflect anticipated market performance.

- The salary increase assumption is based on the same select and ultimate table as the prior valuation. Total compensation changed by 1.3% over the prior valuation; however average annual compensation (compensation divided by number of active members) changed by 1.7%. This assumption is based on expected future experience.

- The funding level of the Gardner Retirement System is 56% compared to 54% for the January 1, 2013 actuarial valuation. The funding level is estimated to be approximately the median of Massachusetts' Contributory Retirement Systems.

The schedule length is sixteen (16) years (which is one more than the remaining schedule from the prior valuation). The maximum period permitted under Section 22F of Chapter 32 of the Massachusetts General Laws is 26 years (2040). The contribution amount was calculated to be 6% higher than the Fiscal 2015 contribution and is scheduled to increase by 6% next year and 4.5% thereafter for the next 13 years. A decrease is expected in Fiscal 2031 when the amortization period ends.

- Non-economic assumptions were changed from the January 1, 2013 actuarial valuation. The mortality assumptions are based upon the RP2000 Table (sex-distinct) increased with Generational mortality and Scale BB. The previous assumption used an 18 year projection with Scale AA. The net effect of this change increased the accrued liability by \$3.0 million and Gross Normal Cost by \$58 thousand.

January 1, 2014 Actuarial Valuation Results

	January 1, 2014	January 1, 2013	Percentage Change
Funding			
Contribution for Fiscal 2016	\$3,435,751		
Contribution for Fiscal 2016 based on current schedule		\$3,435,751	0%
Members *			
▪ Actives			
a. Number	261	262	-0.4%
b. Annual Compensation	\$10,685,820	\$10,545,739	1.3%
c. Average Annual Compensation	\$40,942	\$40,251	1.7%
d. Average Attained Age	47.7	47.7	-0.1%
e. Average Past Service	13.3	13.2	0.6%
▪ Retired, Disabled and Beneficiaries			
a. Number	241	237	1.7%
b. Total Benefits*	\$5,024,259	4,803,159	4.6%
c. Average Benefits*	\$ 20,848	\$20,266	2.9%
d. Average Age	72.7	72.4	0.4%
▪ Inactives			
a. Number	41	43	-4.7%
Normal Cost			
a. Gross Normal Cost	\$1,241,619	\$1,163,596	6.7%
b. Less Expected Members' Contributions	<u>945,734</u>	<u>921,910</u>	2.6%
c. Normal Cost to be funded by the Municipality	\$295,885	\$241,686	22.4%
d. Eighteen month adjustment	15,669	12,799	22.4%
e. Administrative Expense Assumption	<u>145,392</u>	<u>142,714</u>	1.9%
f. Adjusted Normal Cost and Expense	\$456,946	\$397,199	15.0%

*Excluding State reimbursed COLA

	January 1, 2014	January 1, 2013	Percentage Change
Actuarial Accrued Liability as of January 1, 2014			
a. Active Members	\$30,254,368	\$28,591,092	5.8%
b. Inactive Members	725,697	641,569	13.1%
c. Retired Members and Beneficiaries	<u>48,629,740</u>	<u>45,476,517</u>	6.9%
d. Total	\$79,609,805	\$74,709,178	6.6%
Unfunded Actuarial Accrued Liability			
a. Actuarial Accrued Liability	\$79,609,805	\$74,709,178	6.6%
b. Less Actuarial Value of Assets	<u>44,881,790</u>	<u>40,411,365</u>	11.1%
c. Unfunded Actuarial Accrued Liability	\$34,728,014	\$34,297,813	1.3%
d. Eighteen month adjustment	<u>\$1,394,331</u>	<u>\$1,511,023</u>	
e. Adjusted Unfunded Actuarial Accrued Liability	\$36,122,345	\$35,808,836	

- The data was supplied by the Gardner Retirement Board. The data was checked under broad parameters for reasonableness. With the assistance of the staff of the Gardner Retirement Board, we were able to develop a database sufficient for valuation purposes.
- Payroll changed by 1.3% over the course of the past year. Average annual compensation changed by 1.7% over the same time period.
- The salary increase assumption includes general wage adjustments, step increases, and promotional increases.

History of Active Participants

Valuation Year	Number	Average Age	Average Past Service	Average Annual Compensation
2014	261	47.7	13.3	\$40,942
2013	262	47.7	13.2	\$40,251
2011	254	48.2	13.4	\$40,164
2008	291	48.0	13.0	\$35,884
2007	296	47.3	12.3	\$34,028
2006	284	47.0	12.3	\$33,532
2005	296	46.7	11.7	\$30,087

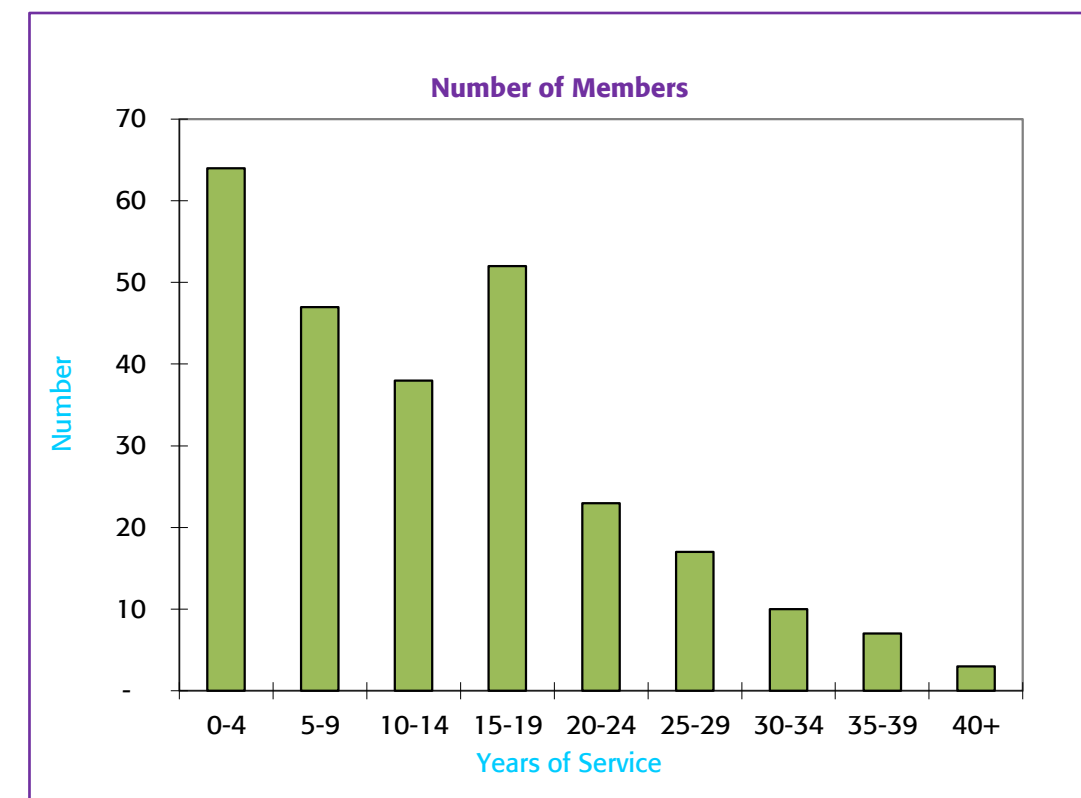
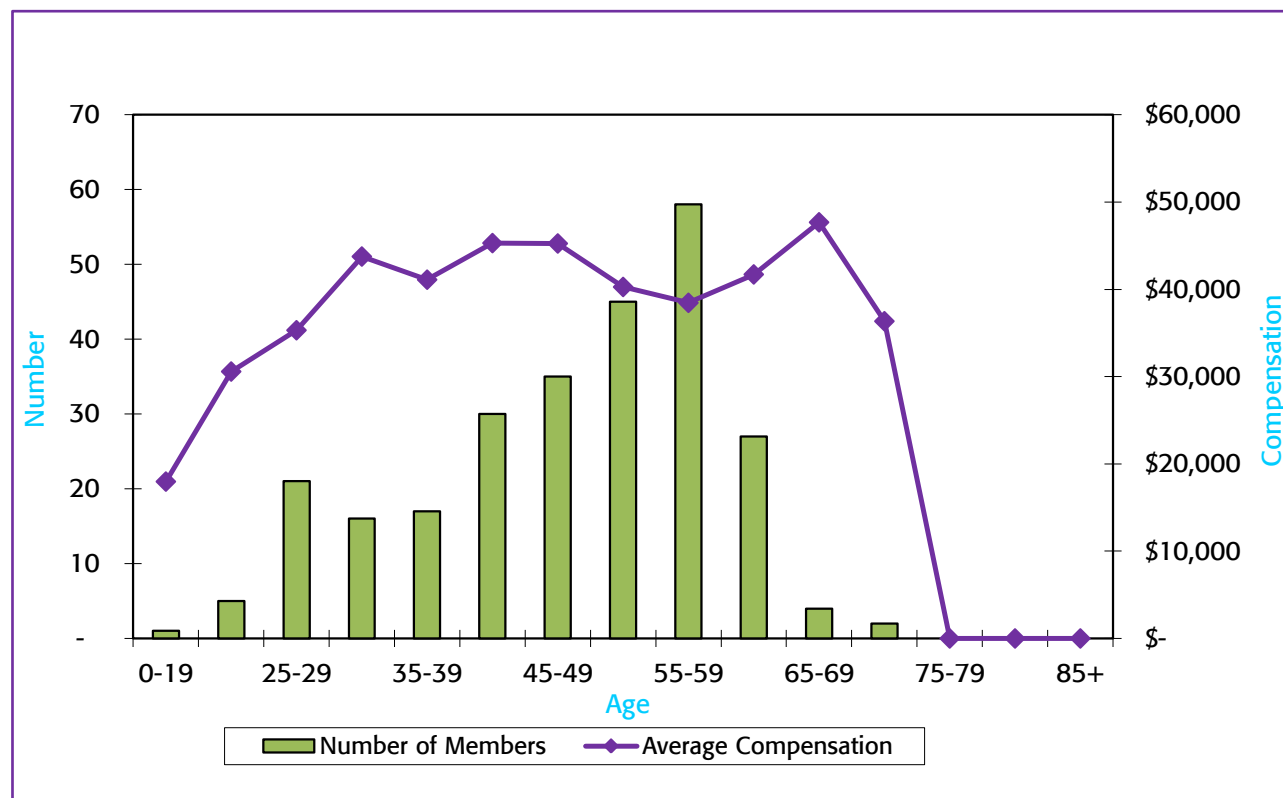
- Employee age has increased by 1.0 years and service has increased by 1.6 years over the past nine years. Average annual compensation has grown by 36.1% (3.5% annually) over the past nine years.

The charts on the following pages summarize demographic information regarding active and retiree members.

Distribution of Plan Members as of January 1, 2014

Active Members

AGE	0-4 Years	5-9 Years	10-14 Years	15-19 Years	20-24 Years	25-29 Years	30-34 Years	35-39 Years	40 + Years	Total	Total Compensation	Average Compensation
0-19	1	-	-	-	-	-	-	-	-	1	\$ 17,972	\$ 17,972
20-24	5	-	-	-	-	-	-	-	-	5	152,896	30,579
25-29	20	1	-	-	-	-	-	-	-	21	741,543	35,312
30-34	10	6	-	-	-	-	-	-	-	16	700,078	43,755
35-39	9	2	4	2	-	-	-	-	-	17	698,756	41,103
40-44	4	9	9	8	-	-	-	-	-	30	1,358,911	45,297
45-49	5	5	8	6	4	7	-	-	-	35	1,583,785	45,251
50-54	5	8	6	12	6	5	3	-	-	45	1,812,145	40,270
55-59	4	11	5	15	11	3	4	5	-	58	2,230,322	38,454
60-64	1	2	5	8	1	2	3	2	3	27	1,126,022	41,705
65-69	-	2	1	1	-	-	-	-	-	4	190,705	47,676
70-74	-	1	-	-	1	-	-	-	-	2	72,686	36,343
75-79	-	-	-	-	-	-	-	-	-	-	-	-
80-84	-	-	-	-	-	-	-	-	-	-	-	-
85+	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL	64	47	38	52	23	17	10	7	3	261	\$ 10,685,820	\$ 40,942

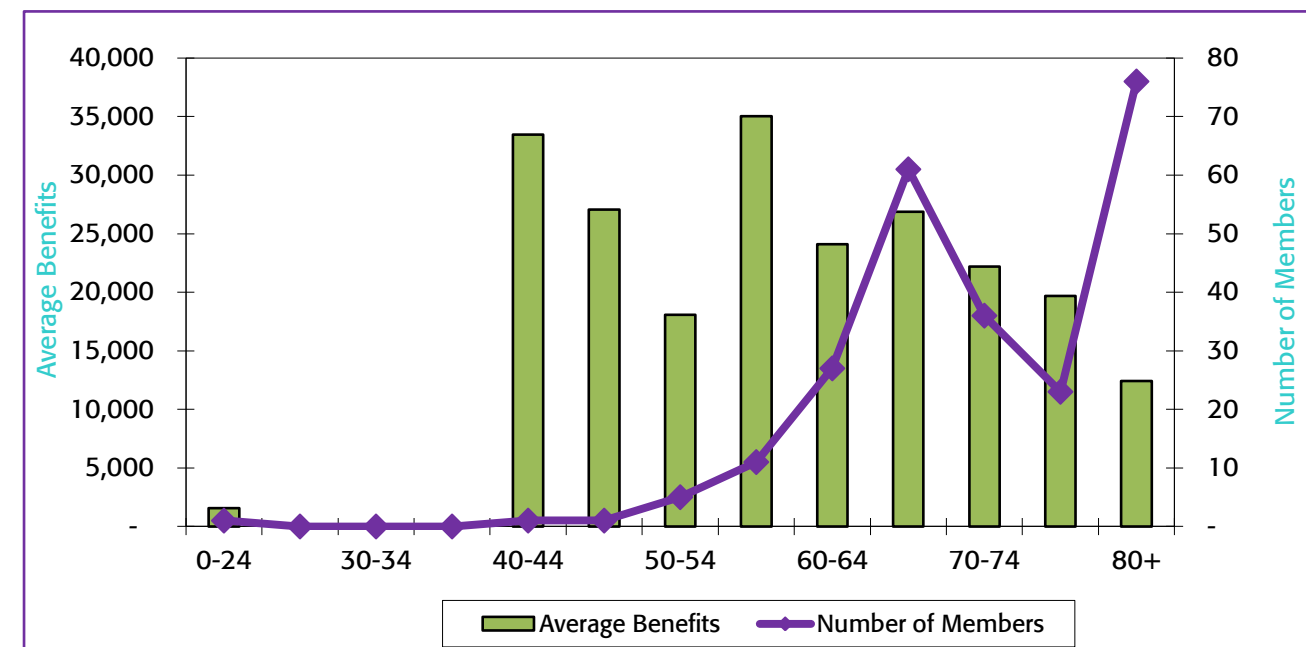


Distribution of Plan Members as of January 1, 2014
Retired Members

Retired Members and Beneficiaries			
Age	Number	Average Benefit	Total Benefit
0-24	1	1,574	1,574
25-29	-	-	-
30-34	-	-	-
35-39	-	-	-
40-44	-	-	-
45-49	-	-	-
50-54	4	15,960	63,838
55-59	8	35,285	282,276
60-64	24	24,878	597,071
65-69	53	26,180	1,387,514
70-74	31	21,996	681,882
75-79	20	18,419	368,374
80+	72	12,242	881,405
TOTAL	212	\$ 20,105	\$ 4,263,935

Disabled Members			
Age	Number	Average Benefit	Total Benefit
0-24	-	-	-
25-29	-	-	-
30-34	-	-	-
35-39	-	-	-
40-44	1	33,448	33,448
45-49	1	27,066	27,066
50-54	1	26,629	26,629
55-59	3	34,380	103,140
60-64	3	18,053	54,159
65-69	8	31,359	250,870
70-74	5	23,454	117,269
75-79	3	28,257	84,771
80+	4	15,743	62,972
TOTAL	29	\$ 26,218	\$ 760,324

Total			
Age	Number	Average Benefit	Total Benefit
0-24	1	1,574	1,574
25-29	-	-	-
30-34	-	-	-
35-39	-	-	-
40-44	1	33,448	33,448
45-49	1	27,066	27,066
50-54	5	18,094	90,468
55-59	11	35,038	385,416
60-64	27	24,120	651,229
65-69	61	26,859	1,638,384
70-74	36	22,199	799,152
75-79	23	19,702	453,145
80+	76	12,426	944,377
TOTAL	241	\$ 20,848	\$ 5,024,259



Benefits shown are net of State reimbursed COLA.

Valuation Methodology

Stone Consulting, Inc. used the Entry Age Normal actuarial funding method in this actuarial valuation. The use of the Entry Age Normal actuarial funding method is consistent with the requirements of Chapter 32 of the Massachusetts General Laws.

NORMAL COST

Valuation Date	January 1, 2014	% of Payroll*
Gross Normal Cost (GNC)	\$1,241,619	11.6%
Employees Contribution	<u>\$945,734</u>	<u>8.9%</u>
Net Normal Cost (NNC)	\$295,885	2.8%
Adjusted to Beginning of Fiscal Year 2016	\$15,669	
Administrative Expense	<u>\$145,392</u>	1.4%
Adjusted Net Normal Cost With Admin. Expense	\$456,946	

*Payroll paid in 2013 for employees as of January 1, 2013 is \$10,685,820. Payroll for new hires in 2013 was annualized.

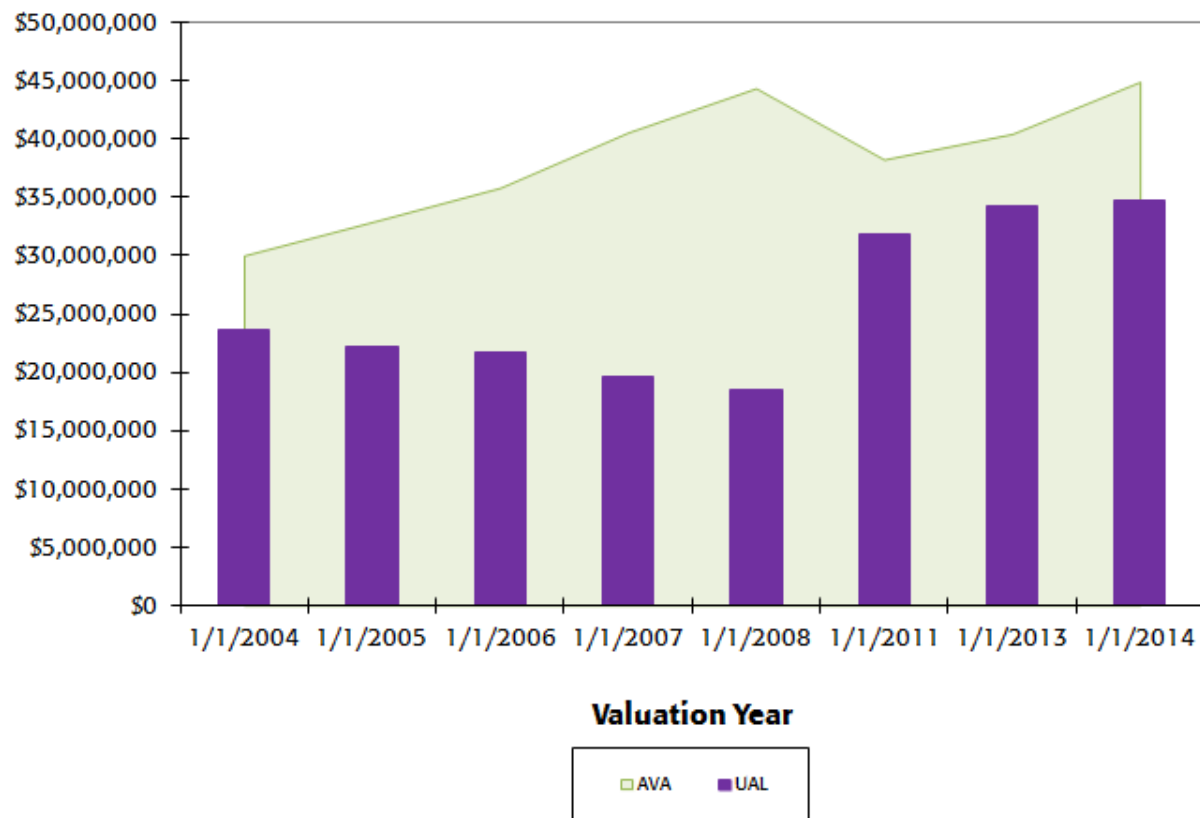
- The gross normal cost (GNC) is the “price” of benefits accruing in the current year if the assumptions underlying the normal cost were realized.
- An individual normal cost represents that part of the cost of a member’s future benefits that are assigned to the current year as if the costs are to remain level as a percentage of the member’s pay. Benefits payable under all circumstances (i.e., retirement, death, disability, and withdrawals) are included in this calculation.
- Anticipated employee contributions to be made during the year are subtracted from the GNC to determine employer normal cost, or net normal cost (NNC).
- Administrative expenses added to the NNC. The administrative expense does not include investment manager and custodial fees. These fees are considered part of the interest rate assumption that is net of fees.

Actuarial Accrued Liability and Funded Status

	January 1, 2014	Percentage Change
Active Actuarial Accrued Liability		
Superannuation \$27,679,449		
Death 726,243		
Disability 1,584,142		
Withdrawal 264,534		
Total	\$30,254,368	5.8%
Retiree, Inactive, Survivor and Beneficiary Actuarial Accrued Liability		
Retirees and Beneficiaries \$40,399,535		
Disabled 8,230,205		
Inactive 725,697		
Total	<u>49,355,437</u>	7.0%
Total Actuarial Accrued Liability (AAL)	\$79,609,805	6.6%
Actuarial Value of Assets (AVA)	<u>44,881,790</u>	11.1%
Unfunded Actuarial Accrued Liability	\$34,728,014	1.3%
Funded Ratio (AVA / AAL)		
2014 (8.00% interest rate):	56%	
2013 (8.00% interest rate):	54%	

- Actuarial Accrued Liability (AAL) is the “price” of benefits attributable to benefits earned in past years, or in other words, represents today’s value of all benefits earned by active and inactive members.
- The total AAL is \$79,609,805. This along with an actuarial value of assets of \$44,881,790 produces a funded status of 56%. This compares to a funded status of 54% for the 2013 valuation.
- The chart on the following page is a history of the unfunded actuarial accrued liability (UAAL) and the valuation assets (AVA) over the course of the past eight actuarial valuations.

History of Actuarial Valuation of Assets (AVA) and Unfunded Actuarial Accrued Liability (UAAL)



Development of Funding Schedule

Net Employer Normal Cost for Fiscal 2016	\$456,946
Net 3(8)(c) payments	144,988
Amortization	2,833,817
Total Appropriation required for Fiscal 2016	\$3,435,751

- The funding schedule is composed of the normal cost, the net 3(8)(c) payments and the amortization of the actuarial accrued unfunded liability and is adjusted by the administrative expense assumption. The contribution is assumed to be made in the beginning of the Fiscal Year (July 1).
- The 3(8)(c) payments is the net of payments made to or from different Chapter 32 Retirement Systems to reflect benefits paid due to service either with the Gardner Retirement System or other Chapter 32 Retirement Systems.
- The contribution amount for Fiscal 2016 is \$3,435,751. The funding schedule is presented on page 11. The schedule's length is sixteen (16) years (for the fresh start base) which is one more year than the January 1, 2013 valuation remaining schedule's length. The maximum funding schedule length allowed by Section 22F of Chapter 32 of the Massachusetts General Laws is twenty-six years to Fiscal 2040.
- In developing the funding schedule, we used a fresh start approach in which the unfunded actuarial accrued liability (UAAL), other than the UAAL due to past early retirement incentives, is reamortized instead of maintaining the existing amortization amount and separately amortizing the actuarial gain or loss. The use of a fresh-start approach can result in a funding schedule in which the changes in contribution amounts from year to year are more consistent. The amortization is adjusted each year to maintain a constant increase in the total contribution. The contribution amount for FY 2016 and FY 2017 is 6% higher than the previous year with 4.50% increases thereafter. There is a decrease in the final year.

GARDNER CONTRIBUTORY RETIREMENT SYSTEM

FUNDING SCHEDULE

Fiscal Year	Normal Cost	Unfunded Liability	Funding Amortization of UAL	Net 3(8)(c) Payments	Schedule Contribution*
2016	456,946	36,122,345	2,833,817	144,988	3,435,751
2017	472,939	35,951,610	3,023,969	144,988	3,641,895
2018	489,492	35,561,853	3,171,301	144,988	3,805,781
2019	506,624	34,981,796	3,325,429	144,988	3,977,041
2020	524,356	34,188,876	3,486,664	144,988	4,156,008
2021	542,709	33,158,389	3,655,332	144,988	4,343,028
2022	561,703	31,863,302	3,831,773	144,988	4,538,464
2023	581,363	30,274,050	4,016,345	144,988	4,742,695
2024	601,711	28,358,322	4,209,418	144,988	4,956,117
2025	622,770	26,080,816	4,411,384	144,988	5,179,142
2026	644,567	23,402,987	4,622,648	144,988	5,412,203
2027	667,127	20,282,766	4,843,637	144,988	5,655,752
2028	690,477	16,674,259	5,074,797	144,988	5,910,261
2029	714,643	12,527,419	5,316,592	144,988	6,176,223
2030	739,656	7,787,693	5,569,509	144,988	6,454,153
2031	765,544	2,395,638	2,395,638	144,988	3,306,170
2032	792,338	-	-	144,988	937,326

Amortization of Unfunded Liability as of July 1, 2014

Year	Type	Original Amort. Amount	Percentage Increasing	Original # of Years	Current Amort. Amount	Years Remaining
2016	Fresh Start	N/A	N/A	16	N/A	16

Notes on Amortization of Unfunded Liability

Year is the year the amortization base was established.

Type is the reason for the creation of the base. Examples are Gain/(Loss) or Fresh Start.

Original Amortization Amount is the annual amortization amount when the base was established.

Percentage Increasing is the percentage that the Original Amortization Amount increases per year.

Original # of Years is the number of years over which the base is being amortized.

Current Amortization Amount is the amortization payment amount for this year.

Years Remaining is the number of years left to amortize the base.

***Contribution** is set to be the amount resulting from a 6% increase on last year's contribution in the first year, followed by another 6% increase, and 4.50% increases thereafter. The contribution in FY2031 decreases by 48.77%.

Assumptions and Methodology Summary

The principal actuarial assumptions used in this valuation are the same as the assumptions used in the previous valuation, except where noted, and are summarized in the following table:

Valuation Date	January 1, 2014 Valuation																					
Interest Rate	8.00%																					
Salary Increase	<table border="1"> <thead> <tr> <th></th><th>Year</th><th>Increase</th></tr> </thead> <tbody> <tr> <td rowspan="3">Group 1</td><td>1</td><td>9.0%</td></tr> <tr> <td>2</td><td>8.0%</td></tr> <tr> <td>10</td><td>4.0%</td></tr> <tr> <td rowspan="3">Group 4</td><td>1</td><td>11.4%</td></tr> <tr> <td>2</td><td>17.0%</td></tr> <tr> <td>10, 20, 30</td><td>4.0%</td></tr> <tr> <td>Ultimate</td><td></td><td>3.25%</td></tr> </tbody> </table>			Year	Increase	Group 1	1	9.0%	2	8.0%	10	4.0%	Group 4	1	11.4%	2	17.0%	10, 20, 30	4.0%	Ultimate		3.25%
	Year	Increase																				
Group 1	1	9.0%																				
	2	8.0%																				
	10	4.0%																				
Group 4	1	11.4%																				
	2	17.0%																				
	10, 20, 30	4.0%																				
Ultimate		3.25%																				
COLA	3% of \$13,000																					
COLA Frequency	Granted every year																					
Mortality	RP-2000 table (sex distinct, healthy employees for actives and healthy annuitants for retirees) projected with scale BB and Generational Mortality. For members retired under an Accidental Disability (job-related), 40% of deaths are assumed to be from the same cause as the disability. Disabled mortality is the healthy retiree table ages set forward 2 years. <i>(Prior valuation used RP2000 projected 18 years with scale AA.)</i>																					
Overall Disability	<table border="1"> <thead> <tr> <th></th><th>Ordinary</th><th>Accidental</th></tr> </thead> <tbody> <tr> <td>Groups 1 and 2</td><td>45%</td><td>55%</td></tr> <tr> <td>Group 4</td><td>10%</td><td>90%</td></tr> </tbody> </table>			Ordinary	Accidental	Groups 1 and 2	45%	55%	Group 4	10%	90%											
	Ordinary	Accidental																				
Groups 1 and 2	45%	55%																				
Group 4	10%	90%																				
Retirement Rates	Groups 1 and 2: Ages 55 – 70, Group 4: Ages 50 – 65 Post April 1, 2012 Hires: Groups 1 and 2: Ages 60 – 70, Group 4: Ages 50 – 65																					
Administrative Expense	\$145,392 budget estimated for FY 2016 provided by Gardner Retirement Board.																					

Assets

a.	PRIT Cash	\$34,126.93
b.	PRIT Fund	<u>44,833,604.88</u>
c.	Sub-Total:	\$44,867,731.81
d.	Interest Due and Accrued	\$.00
e.	Accounts Receivable	257,779.41
f.	Accounts Payable	<u>(243,720.74)</u>
g.	Sub-Total:	\$14,058.67
h.	Market Value of Assets [(c) + (g)]	\$44,881,790.48

- We were furnished with the System's annual report by the Board. The market value of assets as of December 31, 2013 (adjusted for payables and receivables) is \$44,881,790.48.
- The asset allocation as of December 31, 2013 was approximately 20% cash, receivables, payables and fixed income and 80% equities, alternative investments, hedge funds, real estate and other similar asset classes.
- Historically, 10 to 11% has been the expected long-term rate of return for equities, and 6% to 7% has been the expected long-term rate of return for fixed income securities. Many economists and investment professionals are projecting lower returns of 7.00% to 8.50% for domestic equities, 8.25% to 8.50% for international equities, 9.50% for emerging markets, 8.00% for hedge funds, 10% for venture capital, 6.00% for real estate and 4.50% for core fixed income securities. In light of these projections, as well as historical investment returns, the 8.00% interest rate assumption is within the reasonable assumption range. We encourage close monitoring for changes in investment performance against expectations.

Disclosure Information Under GASB Statement 25

SCHEDULES OF FUNDING PROGRESS

(Dollars In Thousands)

Actuarial Valuation Date	Actuarial Value of Assets A	Actuarial Accrued Liability B	Unfunded AAL (UAAL) B-A	Funded Ratio A/B	Covered Payroll C	UAAL as a % of Covered Payroll (B-A)/C
1/1/2014	\$44,882	\$79,610	\$34,728	56%	\$10,686	325%
1/1/2013	\$40,411	\$74,709	\$34,298	54%	\$10,546	325%
1/1/2012*	\$36,951	\$72,591	\$35,640	51%	\$10,155	351%
1/1/2011	\$38,222	\$69,105	\$30,883	55%	\$10,202	303%
1/1/2008	\$44,333	\$62,777	\$18,444	71%	\$10,442	177%

**Not used*

Notes to Schedules

Additional information as of the latest actuarial valuation follows:

Valuation date	1/1/2014
Actuarial cost method	Entry Age Normal
Amortization method	Closed - Approximate level percent of payroll
Remaining amortization period	16 years for the fresh start base
Asset valuation method	Market value of assets (adjusted by accounts payable and receivable)

Actuarial Assumptions

Investment Rate of Return	8.00% per year
Projected salary increases	Group 1 and 2: 9.0% year 1, 8.0% year 2, 4.0% year 10 Group 4: 11.4% year 1, 17.0% year 2, 4.0% years 10, 20 & 30 3.25% all other years for both groups (Years refer to years of service)

PERAC Information Disclosure

The most recent actuarial valuation of the System was prepared by Stone Consulting, Inc. as of January 1, 2014

The normal cost for employees on that date was:	\$945,734	8.9% of payroll
The normal cost for the employer was:	\$295,885	2.8% of payroll

The actuarial liability for active members was:	\$30,254,368
The actuarial liability for retired members was (includes inactives):	\$49,355,437
Total actuarial accrued liability:	\$79,609,805
System assets as of that date:	<u>\$44,881,790</u>
Unfunded actuarial accrued liability:	\$34,728,014

The ratio of system's assets to total actuarial liability was:	56%
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As of that date the total covered employee payroll was:	\$10,685,820
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The principal actuarial assumptions used in the valuation are as follows:

Investment Return:	8.00% per annum
Rate of Salary Increase:	Select and ultimate

SCHEDULE OF FUNDING PROGRESS (Dollars in \$1,000's)

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (UAAL) (b-a)	Funded Ratio (a/b)	Covered Payroll (c)	UAAL as a % of Covered Payroll ((b-a)/c)
1/1/2014	\$44,882	\$79,610	\$34,728	56%	\$10,686	325%
1/1/2013	\$40,411	\$74,709	\$34,298	54%	\$10,546	325%
1/1/2012*	\$36,951	\$72,591	\$35,640	51%	\$10,155	351%
1/1/2011	\$38,222	\$69,105	\$30,883	55%	\$10,202	303%
1/1/2008	\$44,333	\$62,777	\$18,444	71%	\$10,442	177%

*Not used

Actuarial Methods and Assumptions

ACTUARIAL METHODS

Actuarial Cost Method

The Entry Age Normal Actuarial Cost Method has been used in this valuation. Under this method, the normal cost is the amount calculated as the level percentage of compensation necessary to fully fund the prospective benefits from each member's entry age to retirement age.

The actuarial accrued liability represents the theoretical accumulation of all prior years' normal costs for the plan members as if the program had always been in effect. The unfunded actuarial accrued liability is the excess of the actuarial accrued liability over plan assets.

Asset Valuation Method

Market value of assets (adjusted by payables and receivables).

Fiscal Year Adjustment

The actuarial results are adjusted by the valuation interest rate and salary scale to the beginning of Fiscal Year 2016. The unfunded actuarial accrued liability is rolled forward with normal cost and further adjusted by anticipated contributions and interest.

ACTUARIAL ASSUMPTIONS

Investment Return

8.00% per year net of investment expenses.

Salary Increases

	Year	Increase
Group 1	1	9.0%
	2	8.0%
	10	4.0%
Group 4	1	11.4%
	2	17.0%
	10, 20, 30	4.0%
Ultimate		3.25%

Actuarial Methods and Assumptions (Continued)

Withdrawal Prior to Retirement

The rates shown at the following sample ages illustrate the withdrawal assumption. Withdrawal rates are set to zero if the retirement rate at that age is nonzero.

Rate of Withdrawal

Service	Group 1 and 2	Group 4
0	15%	1.5%
1	12%	1.5%
2	10%	1.5%
3	9%	1.5%
4	8%	1.5%
5	7.6%	1.5%
10	5.4%	1.5%
15	3.3%	0.0%
20	2.0%	0.0%
25	1.0%	0.0%
30+	0.0%	0.0%

Disability Prior to Retirement

The rates shown at the following sample ages illustrate the assumption regarding the incidence of disability:

Rate of Disability

Age	Group 1 and 2	Group 4
20	0.01%	0.10%
25	0.02%	0.20%
30	0.03%	0.30%
35	0.06%	0.30%
40	0.10%	0.30%
45	0.15%	1.00%
50	0.19%	1.25%
55	0.24%	1.20%
60	0.28%	0.85%

Disability is assumed to be 45% ordinary and 55% accidental for Group 1 and 2 and 10% ordinary and 90% accidental for Group 4.

Actuarial Methods and Assumptions (Continued)

Rates of Retirement

The rates shown at the following ages illustrate the assumption regarding the incidence of retirement. A member would need to be eligible for the benefit to be assumed to retire. See Summary of Principal Provisions Number 5 for eligibility requirements.

Age	Group 1 & 2 Male	Group 1 & 2 Female	Group 4	Hired after 4/1/2012		
				Group 1 & 2 Male	Group 1 & 2 Female	Group 4
50	1%	1.5%	2%	0%	0%	1.5%
51	1%	1.5%	2%	0%	0%	1.5%
52	1%	2.0%	2%	0%	0%	1.5%
53	1%	2.5%	2%	0%	0%	1.5%
54	2%	2.5%	7.5%	0%	0%	5%
55	2%	5.5%	15%	0%	0%	10%
56	2.5%	6.5%	10%	0%	0%	7%
57	2.5%	6.5%	10%	0%	0%	20%
58	5%	6.5%	10%	0%	0%	10%
59	6.5%	6.5%	15%	0%	0%	15%
60	12%	5%	20%	25%	30%	20%
61	20%	13%	20%	20%	13%	20%
62	30%	15%	25%	30%	15%	25%
63	25%	12.5%	25%	25%	12.5%	25%
64	22%	18%	30%	22%	18%	30%
65	40%	15%	100%	40%	15%	100%
66	25%	20%	N/A	25%	20%	N/A
67	25%	20%	N/A	25%	20%	N/A
68	30%	25%	N/A	30%	25%	N/A
69	30%	20%	N/A	30%	20%	N/A
70	100%	100%	N/A	100%	100%	N/A

Mortality

The RP-2000 mortality table (sex-distinct) projected with scale BB and Generational Mortality. *(Prior valuation used RP-2000 mortality table projected 18 years with scale AA.)* During employment the healthy employee mortality table is used. Post-employment the healthy annuitant table is used.

Disabled Life Mortality

The RP-2000 mortality table for healthy annuitants (sex-distinct) projected with scale BB and Generational Mortality set-forward by 2 years. Death is assumed to be due to the same cause as the disability 40% of the time. *(Prior valuation used RP-2000 mortality table projected 18 years with scale AA.)*

Actuarial Methods and Assumptions (Continued)

Regular Interest Rate Credited to Annuity Savings Account

2% per year.

Family Composition

Members assumed married with 2 dependent children – one male and one female both age 15; age difference between member and spouse assumed to be 3 years (the male being the older).

Cost-of-Living Increases

A 3% COLA on the first \$13,000 of a member's retirement allowance is assumed to be granted every year.

Administrative Expenses

Estimated budgeted amount of \$145,392 for the Fiscal Year 2016 excluding investment management fees and custodial fee is added to the Normal Cost.

Step Increases

Step increases are assumed to be part of the salary increase assumption.

Credited Service

All service is assumed to be due to employment with the municipality.

3(8)(c)

Net 3(8)(c) payments are added to the contribution amount, they have not been included in the Accrued Liability. They are assumed to remain constant.

Contribution Timing

Contributions are assumed to be at the beginning of the fiscal year (July 1).

Municipality

Refers to the various employers that comprise the Retirement System.

Valuation Date

January 1, 2014.

Summary of Principal Provisions

1. PARTICIPANT

Participation is mandatory for all full-time employees whose employment commences before age 65. There are three classes of members in the retirement system:

- Group 1: general employees
- Group 2: employees in specified hazardous occupations (e.g., electricians)
- Group 4: police and firefighters

2. MEMBER CONTRIBUTIONS

Member contributions vary depending upon date hired as follows:

Date of Hire	Member Contribution Rate
Prior to 1975	5% of Pay
1975 – 1983	7% of Pay
1984 – June 30, 1996	8% of Pay
After June 30, 1996	9% of Pay

Members hired after 1978 contribute an additional 2% of pay over \$30,000.

3. PAY

a. Pay

Gross regular compensation excluding bonuses, overtime, severance pay, unused sick pay, and other similar compensation.

b. Average Pay

The average of pay during the three consecutive years that produce the highest average or, if greater, during the last three years (whether or not consecutive) preceding retirement. For members hired after April 1, 2012, five-year averages will be used.

4. CREDITED SERVICE

Period during which an employee contributes to the retirement system plus certain periods of military service and “purchased” service.

5. SERVICE RETIREMENT

a. Eligibility

1) For Group 1, 2 and 4 and hired pre-April 1, 2012: Completion of 20 years of credited service or attainment of age 55 and completion of 10 years of credited service. If a member of group 4, age 55 with no service requirement is also eligible for service retirement.

2) Hired after April 1, 2012: (Group 1 – Age 60, Group 2 – Age 55, Group 4 – Age 50) and completion of 10 years of service

Summary of Principal Provisions (Continued)

b. Retirement Allowance

Determined as the product of the member's benefit percentage, average pay and credited service, where the benefit percentage is shown below (maximum allowance of 80% of average pay):

Benefit Percentage	Group 1	Group 2	Group 4
2.5%	65+	60+	55+
2.4	64	59	54
2.3	63	58	53
2.2	62	57	52
2.1	61	56	51
2.0	60	55	50
1.9	59	N/A	49
1.8	58	N/A	48
1.7	57	N/A	47
1.6	56	N/A	46
1.5	55	N/A	45
Hired after April 1, 2012*			
2.5%	67+	62+	57+
2.35	66	61	56
2.20	65	60	55
2.05	64	59	54
1.90	63	58	53
1.75	62	57	52
1.60	61	56	51
1.45	60	55	50

*Reduction is .125% for each year early instead of .15% per year for employees with over 30 years of service.

In addition, veterans receive an additional \$15 per year for each year of credited service up to 20 years

6. DEFERRED VESTED RETIREMENT

a. Eligibility

Completion of 10 years of credited service.

b. Retirement Allowance

Determined in the same manner as "Service Retirement" section above with the member eligible to start collecting a benefit at age 55, (or age 57 for post-April 1, 2012 hires) or defer until later at his or her discretion. If a member chooses, his or her contributions with interest may be withdrawn. The amount of interest he or she will receive depends on length of service and whether or not the termination of employment was voluntary.

Summary of Principal Provisions (Continued)

7. ORDINARY DISABILITY RETIREMENT

a. Eligibility

Non-job related disability after completion of 10 years of credited service.

b. Retirement Allowance

Determined in the same manner as "Service Retirement" section and calculated as if the member had attained age 55 (or age 57 for those hired after April 1, 2012), if younger. Veterans receive 50% of pay (during final year) plus an annuity based on accumulated member contributions with interest.

8. ACCIDENTAL DISABILITY RETIREMENT

a. Eligibility

Disabled as a result of an accident in the performance of duties. No age or service requirement.

b. Retirement Allowance

72% of pay plus an annuity based on accumulated member contributions with interest. Also, a dependent's allowance per year for each child. Total allowance not to exceed 100% of pay (75% for members hired after 1987).

9. NON-OCCUPATIONAL DEATH

a. Eligibility

Dies while in active service, but not due to occupational injury.

b. Retirement Allowance

Benefit as if Option C had been elected (see below) and member had attained age 55 (or age 57 for those hired after April 1, 2012) if younger. Minimum monthly benefits provided as follows: spouse - \$500, first child - \$120, each additional child - \$90

10. OCCUPATIONAL DEATH

a. Eligibility

Dies as a result of an occupational injury.

Summary of Principal Provisions (Continued)

b. Benefit Amount

72% of pay plus refund of annuity savings fund balance. In the case of an accidental disability retiree who dies of the same cause, the beneficiary receives 72% of the last 12 months salary or the current pension amount, whichever is greater.

11. COST-OF-LIVING INCREASES

An increase of up to 3% applied to the first \$13,000 of annual benefit. Funded by the Municipality from Fiscal Year 1999. Percentage increase is voted on each year by the Retirement Board. Cost-of-living increases granted during Fiscal Year 1982 through Fiscal 1998 are reimbursed by the Commonwealth.

12. OPTIONAL FORMS OF PAYMENT

▪ Option A

Allowance payable monthly for the life of the member.

▪ Option B

Allowance payable monthly for the life of the member with a guarantee of remaining member contributions with interest.

▪ Option C

Allowance payable monthly for the life of the member with 66-2/3% continuing to the member's beneficiary upon the member's death. If the beneficiary predeceases the member, the allowance amount "pops up" to the non-reduced amount.

Glossary of Terms

▪ Present Value of Benefits

Represents the dollar value today of all benefits expected to be earned by current members if all actuarial assumptions are exactly realized.

▪ Actuarial Cost Method

The procedure that is used to allocate the present value of benefits between the liability that is attributable to past service (Actuarial Accrued Liability) and that attributable to future service.

Glossary (continued)

- **Actuarial Assumptions**

Estimates are made as to the occurrence of certain events that determine the level of benefits to be paid and how long they will be provided. The more important actuarial assumptions include the investment return on assets, salary increases and the rates of turnover, disability, retirement and mortality.

- **Actuarial Accrued Liability**

The portion of the Present Value of Benefits that is attributable to past service.

- **Normal Cost**

The portion of the Present Value of Benefits that is attributable to benefits to be earned in the coming year.

- **Actuarial Assets**

Market value of assets (adjusted by payables and receivables) adjusted to phase in investment gains or losses above or below the expected rate of investment return over a five-year rolling period. The phase-in is 20% for year one, 40% for year two, 60% for year three, 80% for year four and 100% for year five. The actuarial value of assets may be no less than 90%, or more than 110% of the market value of assets plus payables and receivables.

- **Unfunded Actuarial Accrued Liability**

That portion of the Actuarial Accrued Liability not covered by System Assets.

- **PERAC**

Public Employee Retirement Administration Commission, a division of the State government which has regulatory authority over the administration of the retirement system.

- **PRIT**

Pension Reserves Investment Trust Fund is the state controlled and administered fund for the investment of assets for members of the retirement system.

- **GASB**

Government Accounting Standards Board (issues guidance for disclosure of retirement system liabilities).